

American Snowball Louse, *Aphis viburnicola* n. sp.

C. P. GILLETTE, Fort Collins, Colo.

(Plate XI).

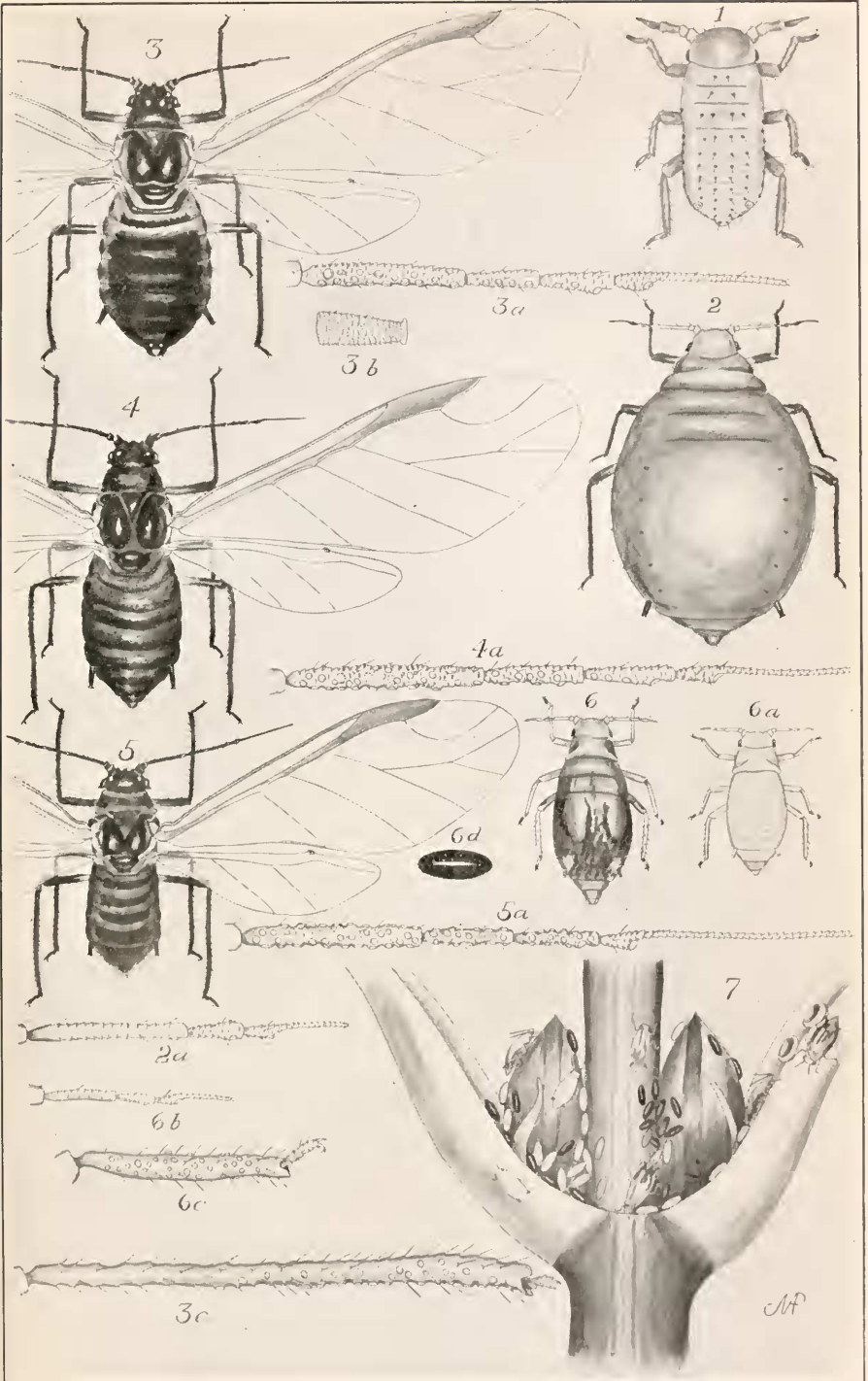
For the past nine years, at least, I have noticed the injuries of a plant louse which attacks the common snowball (*Viburnum opulus*) in Colorado. At first I supposed this to be the *Aphis viburni* described by Scopoli,* Shrank and other European writers, but I have been unable to harmonize any of the descriptions made in Europe with the louse as I have observed it. According to Scopoli's brief description in *Entomologica Carniolica*, 1763, the apterous form of this louse is earthy in color at first, becoming black later and with antennae as long as its body. Buckton in *British Aphididae*, Vol. ii, page 79, quotes Sulzer as saying that the male of *viburni* is apterous, which is never the case with the species occurring here. Sulzer's description I have not seen. Kaltenbach (*Monographie der Pflanzenlause*, page 78) describes the apterous form of *viburni* as "blackish brown or entirely black * * * the young set with strong rather long spines," and the alate form as having the thorax "black, polished; abdomen dark green," and also states that the louse occurs on the bushes from June to October. From the middle of June to about the 10th of September the snowball bushes here have been entirely free from this louse. Koch (*Der Pflanzenlause*, page 122) also describes and figures *viburni* as a black louse. Buckton's descriptions and figures of *viburni* are also quite unlike the louse occurring here upon snowball, and especially is this true of his characterizations of the viviparous and the oviparous females. For these reasons I am considering this American species new.

Young stem mother, Plate XI, fig. 1.

Specimens from insectary before the first molt.

Color apparently ashy gray, but the body is really a very pale greenish yellow and is heavily covered with fine gray powder. Several rows of black dots extend along the median line of the dorsum; upon the meso- and metathorax there is a double row upon either side of the median line, and these are continued over about the first five abdominal segments, where the outer rows cease, and the inner ones continue to about the eighth segment. The cornicles are hardly elevated above the surface and appear from above as two concentric black rings, the outer being the

* I am under obligations to Mr. J. T. Monell for a copy of Scopoli's description.



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heavier. Antenna stout, five-jointed (counting the unguis), the 4th and 5th joints being united into a spindle-shaped portion strongly constricted at the base. A row of black dots also extends along either lateral margin of the body, each black spot bearing a dark hair; head, antennae and legs dusky brown; legs and antennae stout and rather hairy. Length .51 mm.

Young adult stem-mother.

From snowball bush in insectary, and just beginning to give birth to young.

General form very plump, color bluish white, due to the entire body, except the terminal segment of the abdomen, being covered with a white powder; eyes, distal half of antennae, cornicles, tarsi, tibiae and point of of beak black; distal halves of middle and hind femora dusky. Length of body 2.50 mm.; width 1.50 mm.; antennae .90 mm.; joints three .37; four, .11; five, .09; six, .16 mm.; cornicles, .18 mm. Cauda small, broad as long, dusky in color as are the genital plates also. Cornicles short, stout, tapering, and with moderate flange.

In alcohol or balsam the general color is pale green, sometimes showing a little orange in the region of the cornicles. Eyes dark red. Lateral tubercles of prothorax small and weak, and similar slight tubercles upon about 3 or 4 of the abdominal segment.

Old adult stem-mother Plate XI, figs. 2 and 2a.

The old stem-mothers taken May 18, 1908, with large colonies of their young, many of which were about to become winged, were deep green, almost a blue-green in color, with more or less white powder over the entire body. Some specimens, however, had the powder nearly all off from the dorsum. The cornicles, genital plates, hind margin of eighth abdominal segment, distal half of the very small cauda, distal ends of antennae and beak, all of cornicles, tarsi and tibiae, and greater portion of femora black or blackish. The body, legs and antennae are rather sparsely set with very delicate pubescence; lateral thoracic and abdominal tubercles very weak; eyes dark red. Upon the dorsum may be seen from 2 to 6 longitudinal rows of small black or blackish specks when specimens are put in alcohol. Length of body 2.75-3 mm.; antennae 6-jointed and about .90 mm. long.

Young or second generation.

The young that are given birth to by the stem-mothers are apparently white, but really slightly tinged with green or a very light yellow, and have red eyes as the only conspicuous dark parts; the tarsi and extreme end of the beak are also dusky to black. The body above lacks entirely the small black dots and dusky colorations upon the head that show upon the young of the stem-mothers, but the bodies are dusted with white powder.

Pupa.

The pupae vary from pale green to very pale yellow (almost white), and have no dark coloration except the red eyes and the dusky to black-

ish distal ends of antennae, beak, the tarsi, and, in some, slightly darker extreme tips of the short cornicles. The body is lightly covered with white powder.

Alate female, second generation, spring migrant, Plate XI, figs. 3, 3a, 3b, 3c.

From examples taken May 20, 1908, at Fort Collins, Colo.

General color above black, including legs (except proximal ends of femora), cornicles, genital plates and antennae; basal portion of the abdomen and most of the venter pale yellowish green; the dark portion of the abdomen seems really to be a very dark green, at least in younger examples. Length of body 2.50 mm.; wing 3.60 mm.; antennae 1.20 mm.; joints of antennae about as follows: three .39; four .18; five .17; six .09; seven .30 mm.; cornicles .20 mm.; cauda .10 mm., very short, and rather bluntly rounded; cornicles nearly cylindrical, a little constricted near the end, and with a moderate flange. Joints 3 to 6 of antenna rather stout, joint 3 usually with about 16 circular, slightly tuberculate sensoria of varying sizes, the number, however, is subject to considerable variation; joint 4 with 2 to 4, and joint 5 with 1 to 3 sensoria; joint 6 very abruptly constricted to the flagellum or 7th joint. On the middle of the lateral margin of the prothorax there is a short blunt tubercle and usually a similar tubercle may be seen at the postero-lateral angle; a similar but shorter blunt tubercle occurs upon the lateral margins of each abdominal segment before the cornicles; on joint 8, just anterior to the base of the cauda, is a pair of small tubercles that are nearly transparent and resemble tuberculate sensoria; beak barely attaining hind coxae; no pronounced antennal tubercles; antennae, legs and body rather sparsely set with short stout hairs; hind femora swollen in distal half, where there are 20 or more sensoria. This is the first and only case I have known of sensoria occurring upon the tibiae of a spring migrant of any viviparous female aphid.

Winged viviparous female; return migrant, Plate XI, figs. 4, 4a.

The head, mesothorax, antennae, tibiae, and femora at their distal ends, tarsi and honey tubes black; prothorax and style dusky brown; wings hyaline, with the veins brown, stigma dusky, subcostal vein fully twice as broad as the costal. The abdomen is rusty brown at base, with darker transverse bands towards the cornicles, and is nearly or quite black upon the middle of dorsal portion. Subanal plate black; abdomen rusty brown below, and about three black spots along either lateral margin; style very short, about one-half as long as the tarsi. Length of body 2.7 mm.; length of wing 4 mm.; antennae 1.50-1.60 mm.; cornicles .20 mm.; cornicles slightly larger towards the base. There is a small tubercle on either side of the prothorax near the hind angles. The joints of the antennae measure as follows: one .08 mm.; two .06 mm.; three .40-.48 mm.; four .22 mm.; five .20 mm.; six .10 mm.; seven .40-.48 mm., the seventh joint usually some longer than the third. Joints three, four

and five have many circular tuberculate sensoria. Joint three has about 30, four about 8, five about 4 sensoria, and six has the usual cluster at the tip. The number to a joint is somewhat variable.

Alate male, Plate XI, figs. 5, 5a.

Head, antennae, lobes of mesothorax, legs, except bases of femora, sternum, pleura of mesothorax and cornicles black; abdomen rusty brown; eyes very dark red, appearing almost black. Length of body 1.80-2 mm.; antennae 1.60 mm.; joints three .40; four .21; five .18; six .09; seven .51 mm. Joints three, four and five with very numerous small circular sensoria, joint three being specially rough and tuberculate; joint six very short and stout; cornicles short, cylindrical, .14 mm. long. The abdomen above is marked with more or less distinct transverse dusky dashes that are largest over the posterior half. Prothoracic tubercles usually present at hind angles; cauda very small; length of wing 3.40 mm., hyaline; stigma dusky, veins dark brown.

Apterous oviparous female, Plate XI, figs. 6, 6a, 6b, 6c.

The abdomen long and pointed posteriorly; when young, pale yellow, almost white in color; becoming sordid yellow to salmon-pink as they mature; eyes red; tips of cornicles and cauda blackish. Length 1.50-1.80 mm.; antenna .45-.50 mm. long, six-jointed, joint three the longest, being a little longer than 4 and 5 combined, and joint six is nearly as long as three. Cornicles short, cylindrical, not as long as hind tarsi. Hind tibiae broad, flattened, and with numerous oval sensoria of varying size throughout its length. There are no lateral tubercles upon thorax or abdomen.

A few important records at Ft. Collins are as follows:

April 10, 1904, the very earliest lice are now hatching and accumulating upon the opening buds of the snowball.

April 15, 1902, lice hatching and accumulating on the opening buds.

May 7, 1903, lice beginning to curl the leaves. Largest leaves about 1 cm. long. Many *Syrphus*-fly eggs are being laid; largest lice now 1.80 mm. long, pale green in color, and covered with powder, no spines or tubercles.

May 18, 1908, Ft. Collins, stem-mothers and their young abundant in the curled leaves, the former all deep blue or greenish blue in color, and the nymphs apparently all becoming pupae, some of which seem fully grown.

June 13, 1901, many white larvae and pupae, and some alate females. Apparently all stem-mothers are still living.

June 13, 1901, the louse upon snowball bushes does not agree with Buckton's description of *Aphis viburni*.

June 30, 1908, Ft. Collins, can find no lice on any of the bushes where they were so abundant in May.

September 10, 1907, alate males, viviparous females and the white oviparous females all present on leaves of snowball now. Some of the oviparous females are nearly full grown.

September 15, 1908, Ft. Collins. Mr. L. C. Bragg tells me he found the first return migrants upon snowball leaves today.

September 22, 1900, alate females are giving birth to white larvae upon snowball leaves.

September 27, 1908, Ft. Collins. Mr. Bragg brought snowball leaves in the laboratory today, having males, viviparous females and the little white oviparous females upon them.

October 8, 1908, Denver, Colo., alate males and females and oviparous females are plentiful upon leaves of snowball in city park.

October 15, 1908, Ft. Collins, some of the oviparous females are now fully grown and laying eggs.

October 17, 1899, scattering specimens of alate viviparous females on snowball leaves now.

October 25, 1900, both males and oviparous females are upon the leaves and adult oviparous females are laying eggs.

Mr. J. T. Monell, to whom I am indebted for many valuable notes and suggestions in relation to plant louse studies, permits me to make the following extract from his letter to me dated February 3, 1909.

"I have examined the slide of the *Viburnum aphid* with much interest and thank you for it. I think you will be interested to know that I have found the same species here and that it shows the same tibial sensoria. * * * I enclose brief notes which agree with your observations.

"*Aphis*, n. sp., 532, Apr. 24, '07.

"Cold backward spring. Stem-mothers with minute young, curling leaves into pseudo galls on snowball bush in my yard.

"Apr. 28, '07, green pulverulent stem-mother still present.

"May 10, '07, pupae and some winged lice in rolled leaves.

"May 11, '07, winged lice found but no apterous ones.

"Nothing further seen of the species though the bushes were frequently examined afterwards."